

56. *Marmosa parata*, Thos.

♀ and 2 young. 11, 12, and 18. Para Zoological Gardens.
Described in 1911 from a specimen obtained at Igarapé-
Assu by Mr. A. Robert.

Specimens nos. 155, from Villa Braga, and 39 and 41, from
Ceará, are also allied, but show certain differences, for whose
due appreciation further material is required.

57. *Monodelphis* * *brevicaudata*, Erxl.

♂. Taperinha, near Santarem (Dr. Hagmann).

58. *Monodelphis* *emilic*, Thos.

Peromys emilic, Thos.

♂. 161, 162. Villa Braga, R. Tapajoz.

These two excellent specimens of this rare and beautiful
opossum are of interest owing to their again showing the
curious vinaceous coloration of the under surface on which
some notes were given in the original description (*l. c.*).
Both examples are old males and have the coloration covering
nearly the whole of the under surface, quite uniformly, and
similar in each case. It is, perhaps, possible that this colour,
so unlike a normal mammal colour, may be due to a staining
by some external cause, say a purple-juiced bark, and the
rapid change in the colour after death recorded by Fräulein
Suehlage would be in favour of such a view.

Whether natural or artificial, it probably increases with
age, as both these examples are quite old, and have it at a
maximum.

XXXIV.—Notes on some Parasitic Worms from East Africa.

By H. A. BAYLIS, M.A.

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THE five species to be considered formed part of a collection
of parasites made by Mr. A. Loveridge during 1917–1919 in
British, and what was formerly German, East Africa.

NEMATODA.

1. *Ascaridia fasciata*, sp. n. (Figs. 1–3.)

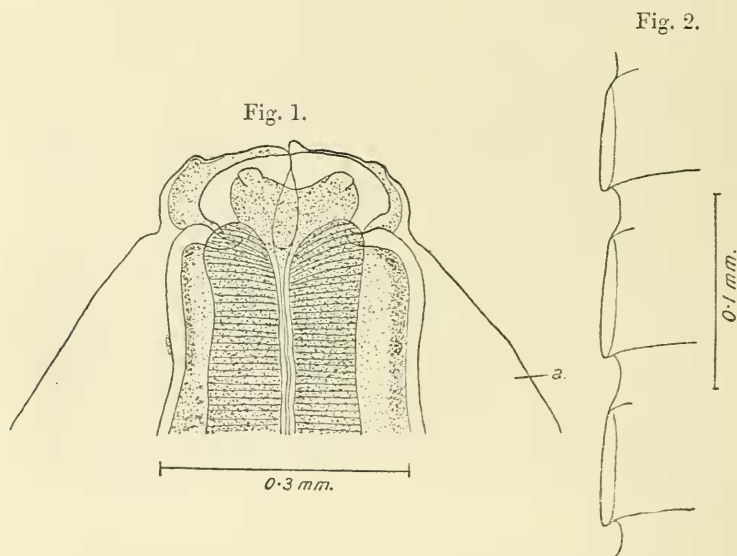
Host: *Vinago delalandii*, subsp.

Locality. Dar-es-Salaam.

* Cf. Ann. & Mag. Nat. Hist. (9) v. p. 195 (footnote).

This form is very closely related to *Ascaridia* [*Heterakis*] *longecirrata* (v. Linstow, 1879 *), the host of which was also a dove, *Geopelia* sp. v. Linstow's very brief description, however, mentions only nine pairs of caudal papillæ in the male, whereas the present form shows thirteen pairs (see below). The relative length of the œsophagus is also less than in v. Linstow's species.

The male measures up to 43 mm. in length and 1 mm. in thickness, the female up to 74 mm. and 1.9 mm. respectively. The anterior end is usually curled towards the dorsal side.



Ascaridia fasciata.

Fig. 1.—Head of male; dorsal view. *a*, cervical ala.

Fig. 2.—Portion of cuticle in optical longitudinal section, showing the annular thickenings.

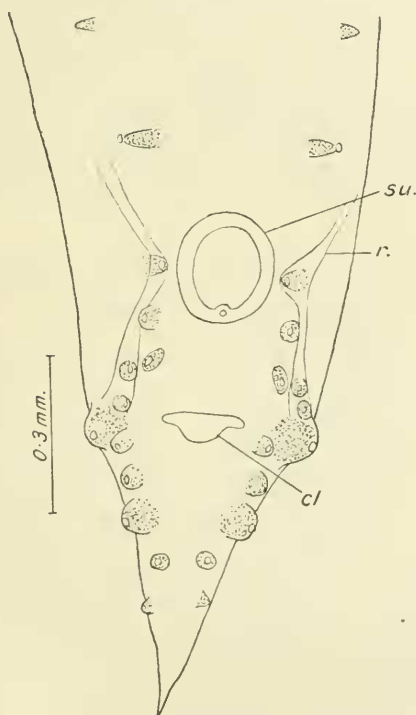
The tail is straight, and tapers to a fine point in both sexes. There are three large lips of semicircular outline, the dorsal lip (fig. 1) bearing two large papillæ, the ventro-lateral lips each a single median papilla. The diameter of the head is 0.3–0.48 mm. The cuticle is marked with thickened transverse rings (fig. 2), which can hardly be called striations (cf. v. Linstow's account of *H. longecirrata*). In the middle

* Arch. f. Naturg. p. 175, pl. xi. fig. 23.

of the body they attain a maximum width (measured from the posterior limit of one ring to the posterior limit of the next) of 0.1 mm.

The anterior end of the worm is provided with well-developed lateral alæ (fig. 1, *a.*), attaining a width of 0.3 mm. or more at the widest part, which is at about 1.4 mm. from the anterior extremity, and extending backward for from 3 to

Fig. 3.



Ascaridia fasciata. Caudal end of male; ventral view.

cl., cloaca; *r.*, lateral cuticular ridge; *su.*, sucker.

4 mm. The cesophagus is simple and short, shaped like a slender Indian club, and measuring 2.4–3.7 mm. in length, or roughly $\frac{1}{20}$ of the total length. The nerve-ring is situated at 0.7–0.9 mm., and the excretory pore at 0.85–1.0 mm., from the anterior extremity. "Internal vesicles" (*cf. Ascaridia maculosa*) are seen within the body-wall, some of them being very large (up to 0.4 mm. in diameter).

In the male the tail (fig. 3) is 0·7 mm. long. The spicules are of equal length (1·9 mm.), and are alate, measuring about 0·07 mm. in width. There are thirteen pairs of caudal papillæ—five postanal, one large adanal, and seven preanal. The preanal sucker (fig. 3, *su.*) measures 0·25 mm. in diameter. The body is somewhat compressed laterally in the region of the sucker, and the cuticle raised ventrally into two longitudinal ridges (fig. 3, *r.*) at the sides of the sucker. These ridges perhaps represent caudal alæ.

In the female the tail is 1·25–1·6 mm. long. The vulva is situated very slightly in front of the middle of the body. The vagina and unpaired portion of the uterus are short, and together form a tube which runs forward in a sinuous course for about 2 mm., before giving off at right angles the two uterine branches, which run perfectly straight forward and backward respectively. The ova are of oblong-oval shape, with a thick shell, and measure $88\ \mu \times 45\ \mu$.

2. *Subulura loveridgei*, sp. n. (Fig. 4.)

Host: (?) *Mungos* [*Crossarchus*] *juscatus*.

Locality. (?) Morogoro.

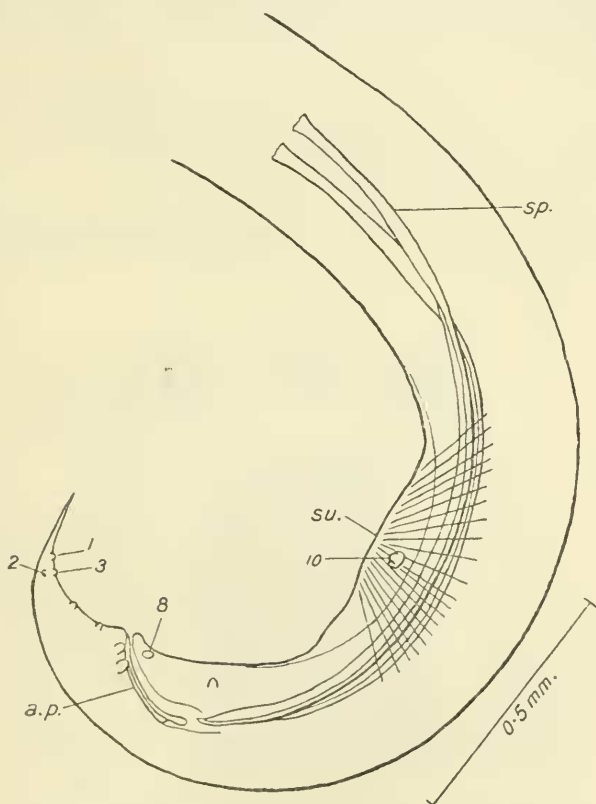
This is a slender little worm, which occurred in very large numbers. The identification of the host, unfortunately, is somewhat doubtful, owing to the loss of the collector's label, but Mr. Loveridge believes that it was that named above. A species of *Subulura* is already known from a closely-related host (*S. schebeni*, v. Linst., from *Cynictis penicillata*), but the present species is considerably larger.

The largest specimens measure: male 19 mm. long and 0·52 mm. thick, female 29·7 mm. long and 0·65 mm. thick. There are no cervical alæ. The œsophagus, including the posterior bulb, measures 1·75 mm. in length from the anterior extremity in the male, and 2·15 mm. in the female. The bulb is distinctly marked off by a constriction, contains a chitinous denticular apparatus, and measures 0·3–0·35 mm. in length. The nerve-ring is situated at 0·35 mm. from the head-end in both sexes, and the excretory pore at 0·625–0·65 mm.

In the male the caudal end (fig. 4) is provided with a rudimentary preanal sucker (fig. 4, *su.*). The tail itself measures 0·37 mm. in length. There are ten pairs of papillæ, of which seven are postanal. The second and seventh pairs are situated more laterally than the rest. The two equal spicules (fig. 4, *sp.*) measure 1·55 mm. in length. At the proximal end they are simple and tubular, but at about

0.4 mm. from the base the tubular portion is suddenly narrowed to form a supporting rib along the dorsal edge, while the ventral edge is produced into a flange. There is an accessory piece (fig. 4, *a.p.*) measuring 0.23 mm. in length. The extremity of the tail is produced into a very fine tapering filament.

Fig. 4.



Subulura loveridgei. Caudal end of male; lateral view.

a.p., accessory piece; *sp.*, spicule; *su.*, sucker; 1-10, papillæ.

In the female the tail, which is 1.7 mm. long, tapers gradually from the anus to a fine point. The vulva is situated considerably in front of the middle of the body, at 11.9 mm. from the head-end. There is an ovejector like that of *S. allodapa* and *S. forcipata*, as described and figured by

Senrat*. The ovejector itself measures 0.65 mm. from the vulva in a forward direction, ending anteriorly in an oval chamber into which the vagina opens dorsally by a narrow canal with thick walls. At a point 0.95 mm. from the vulva the vagina bends back upon itself towards the posterior end. The precise course of the uteri has not been traced, but they appear to run back nearly as far as the anus, and then turn forward again, the most anterior coils extending to within 1.6 mm. of the oesophageal bulb. The ova contain coiled embryos, and measure $75\mu \times 62.5\mu$.

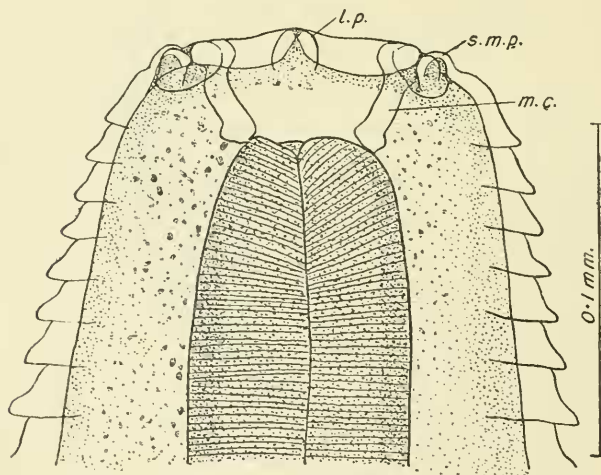
3. *Thelazia depressa*, sp. n. (Figs. 5-7.)

Host: (?) *Mungos* [*Crossarchus*] *fasciatus*.

Locality. (?) Morogoro.

In the same tube with the numerous specimens of *Subulura* just described there occurred a pair, male and female, of a

Fig. 5.



Thelazia depressa. Head of female; lateral view.

l.p., lateral papilla; *m.c.*, wall of mouth-capsule; *s.m.p.*, submedian papilla.

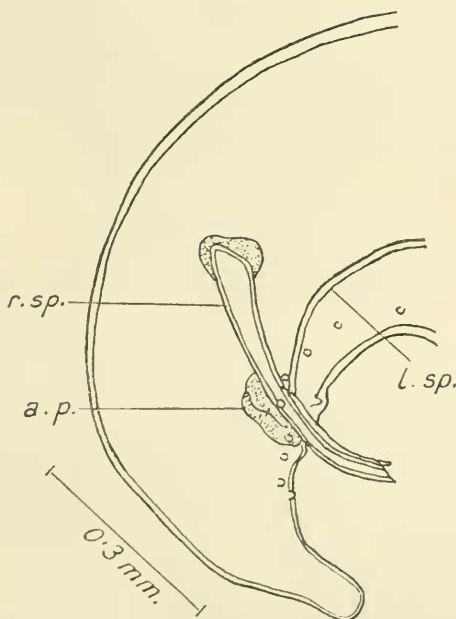
form which appears to belong to the genus *Thelazia*. The usual habitat of the worms of this genus is the orbital region of birds and, more rarely, of mammals. It is possible that

* C. R. Soc. Biol. Paris, ii. (1914) p. 154, figs. 2, 4.

the present case is one of pseudo-parasitism, the actual host having been some bird or other animal upon which the mongoose had just been feeding when it was killed. The worms are fairly well preserved, though the cuticle of the male has been ruptured in one place.

The total length is about 14 mm. in the male and 21 mm. in the female. The body, especially anteriorly, is flattened dorso-ventrally. The maximum thickness (from side to side)

Fig. 6.



Thelazia depressa. Caudal end of male; lateral view.

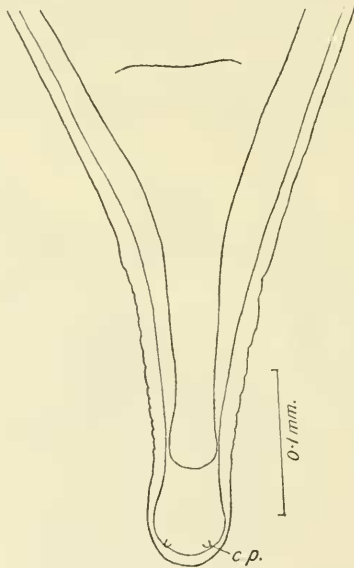
a.p., accessory piece; *l.sp.*, left spicule; *r.sp.*, right spicule.

is 1 mm. There are pronounced transverse cuticular rings, with very prominent posterior edges. They are especially well-marked on the anterior portion of the body, where they are 25–35 μ in width (antero-posteriorly). Towards the tail they gradually become narrower and less prominent.

There is a wide and shallow mouth-capsule with very thick cuticular walls (fig. 5, *m.c.*), but without teeth. It measures 0.04 mm. in depth and 0.05–0.06 mm. in width. The mouth

is surrounded by papillæ, of which two are lateral (fig. 5, *l.p.*) and four submedian (fig. 5, *s.m.p.*), the latter being apparently double papillæ. The terminations of the papillæ are at the bases of small funnel-like cuticular depressions. The œsophagus is simple, increasing slightly in diameter posteriorly, and both it and the anterior part of the intestine are very slender. The length of the œsophagus is 1.2 mm. in the male and 1.3 mm. in the female. There is a pair of very prominent lateral neck-papillæ situated at about half the length

Fig. 7.



Thelazia depressa. Tail of female; ventral view.

c.p., caudal papilla.

of the œsophagus from the anterior end. The nerve-ring surrounds the œsophagus at 0.5 mm. from the head-end. No excretory pore has been detected.

The tail, in both sexes, ends bluntly in a slight knob-like swelling, which is most pronounced in the female. The caudal end of the male (fig. 6) is curved towards the ventral side, and the tail itself measures 0.3 mm. in length. There are no caudal alæ. The caudal papillæ are small; there are about fifteen pairs—four postanal (close together), one pair

adanal, and about ten preanal, in a regular series. Immediately in front of the cloaca there is an unpaired ventral papilla. Two very unequal spicules (fig. 6, *l.sp.*, *r.sp.*) and an accessory piece (fig. 6, *a.p.*) are present. The left spicule measures 2.7 mm. in length, and is very slender. The right spicule is much stouter, but measures only 0.5 mm. in length. The latter is alate for the distal half.

In the female the tail (fig. 7) is 0.35 mm. long and is quite straight. On the ventral surface, close to the tip, it bears a pair of minute papillæ. The vulva is situated in the œsophageal region, just behind the neck-papillæ. The vagina runs posteriorly as a narrow tube for some distance. The two uteri run posteriorly in parallel coils. They are wide and thin-walled tubes, containing large numbers of fully-formed embryos, closely coiled together, and apparently not enclosed in egg-shells. The species is therefore apparently viviparous. The coils of the ovaries extend back to within 3.5 mm. of the anus.

CESTODA.

4. *Oochoristica zonuri*, Baylis, 1919.

Host: *Zonurus tropidosternum*.

Locality. Dodoma.

The original specimens of this form* came from the same host-species, from Portuguese East Africa. The present specimens do not differ sufficiently from the type to be regarded as a distinct species, but there are certain discrepancies which indicate that the species *O. zonuri* is a somewhat variable one. In size the present material is distinctly smaller than the type, the longest complete specimen not exceeding 80 mm. in length, while the greatest width is about 2 mm. The worms are less contracted in an antero-posterior direction, and show a considerable unsegmented neck behind the scolex. The scolex itself is slightly larger (about 1.1 mm. in diameter). The suckers also are a little larger (0.55 × 0.4 mm.). The most posterior segments are longer than broad. The number of testes appears to be from eighty to ninety, instead of sixty to seventy, as in the type.

The measurements given in the key to certain species of *Oochoristica* from lizards, in my former paper, should, of course, be regarded as a rough guide only, and were intended as such. It is clear that such measurements must be of relatively small value in the case of cestodes, which are liable to exhibit great variations due to different states of contraction.

* 'Parasitology,' xi. (1919) p. 406.

5. *Oochoristica crassiceps*, sp. n. (Figs. 8 and 9.)Host: *Psammophis subtaeniatus*.

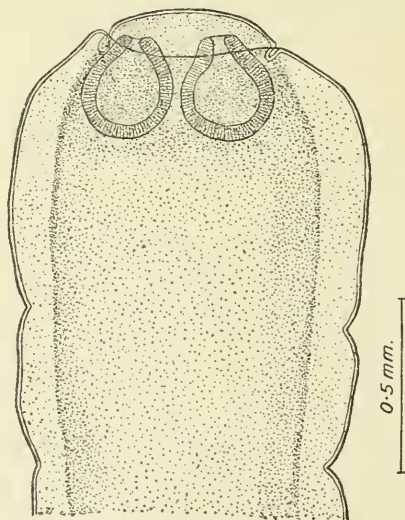
Locality. Mombasa.

The material consists of two specimens. The larger of these measures about 3 cm. in length. Portions of the smaller individual have been used for the preparation of sections, but it is impossible at present to give a very complete account of the anatomy.

External Features.

The scolex (fig. 8) measures 1.0–1.1 mm. in width. A rudimentary rostellum is present, measuring 0.5 mm. in

Fig. 8.

*Oochoristica crassiceps*. The scolex.

transverse diameter. The suckers, of which two are situated on the dorsal and two on the ventral surface, are sunk into the substance of the scolex, and their apertures are anterior. Their outside measurements are 0.3 mm. antero-posteriorly and 0.25 mm. transversely. The strobila is widest towards the anterior end, where it attains a maximum width of 1.3 mm. Posteriorly it tapers gradually down to 0.65 mm. in the last segment.

The cuticle is less wrinkled than is usual in the genus, and there is little external sign of segmentation, the intersegmental divisions being marked only by a slight constriction. There is no sign of segmentation at all for about 2.5 mm. from the anterior end. This unsegmented "neck" measures 0.9 mm. across at the narrowest part. Behind this about one hundred segments can be counted, but the more anterior of them are very ill-defined. The youngest segments are much broader than long. Mature and early gravid segments are about twice as broad as long, while posteriorly the length gradually increases in proportion to the breadth, the last three or four segments being longer than broad.

The genital pores are irregularly alternating, and are situated near the anterior corners of the segments.

Internal Structure.

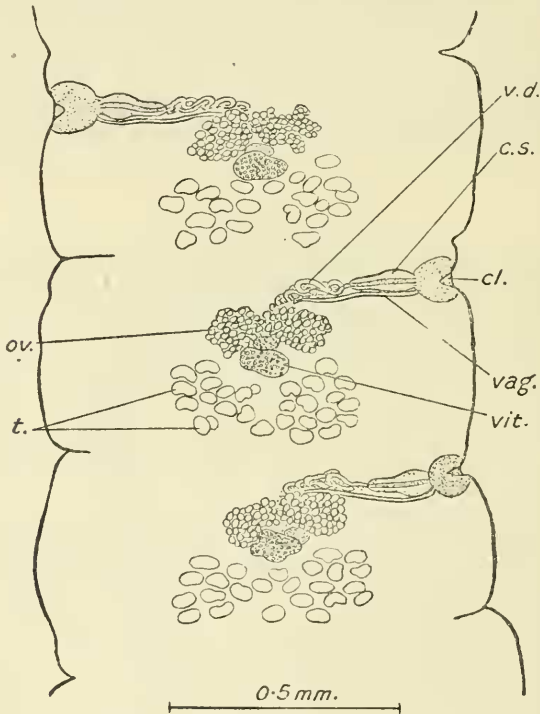
In a transverse section the medullary parenchyme occupies about one-third of the total dorso-ventral diameter. Of the longitudinal muscles, the inner layer, which separates the cortical from the medullary parenchyme, is the most highly developed, consisting of twenty to thirty bundles of fibres dorsally and a similar number ventrally. Externally to this, in the thickness of the cortical parenchyme, there is another layer, consisting chiefly of single fibres, vaguely subdivided into two concentric series.

The excretory system, as far as can be seen in the sections, consists of the usual two pairs of longitudinal vessels, which are situated at some distance from the lateral borders of the segments and nearer to the middle line than the longitudinal nerves. Both vessels on either side follow a very tortuous course. One of them is wider and thinner-walled than the other, but it is difficult to decide which is dorsal and which ventral. Transverse intersegmental vessels cannot be made out with any certainty, nor does there appear to be any network.

Genital Organs.—The genital pore leads into a cloaca (fig. 9, *cl.*) about 0.1 mm. long, with a narrow lumen distally, but expanding into a wider chamber proximally. The genital ducts pass between the two excretory vessels, and (assuming that the wider of these is, as usual, the ventral one) ventrally to the longitudinal nerve. (This is contrary to the arrangement found in other species of *Oochoristica* in which the point has been studied.) The cirrus-sac (fig. 9, *c.s.*) is of an elongate pear-shape, the widest part being nearest to the genital cloaca. It measures about 0.15×0.07 mm. The

vagina (fig. 9, *vag.*) opens into the cloaca behind the cirrus-sac, in the same horizontal plane. It has a wide lumen for the greater part of its length, the distal portion probably serving as a receptaculum seminis. Just before reaching the female glands it suddenly becomes narrow. The vas deferens

Fig. 9.



Ochoristica crassiceps. Semidiagrammatic view of the arrangement of the genital organs in three consecutive mature segments (from a whole preparation).

cl., genital cloaca; *c.s.*, cirrus-sac; *ov.*, ovary; *t.*, testes; *vag.*, vagina; *v.d.*, vas deferens; *vit.*, yolk-gland.

(fig. 9, *v.d.*) is considerably coiled. There is no specialized seminal vesicle.

The general arrangement of the female organs is similar to that found in other species. The ovary (fig. 9, *ov.*) is the most anterior organ, and lies in the median field of the

segment, very slightly towards the pore side. It attains a transverse diameter of nearly 0.4 mm., and is more or less distinctly divided into two lateral portions. The yolk-gland (fig. 9, *vit.*) lies behind it, and has a maximum diameter of about 0.1 mm. Between the ovary and yolk-gland is the shell-gland.

There are from twenty to thirty testes (fig. 9, *t.*), arranged in a single layer at the back of the segment, in the median field, and not extending forward at the sides further than the level of the yolk-gland. Their average longest diameter (transverse) is about 0.05 mm.

Mature segments begin to appear at about the fortieth from the posterior end. There are only about eight segments with fully developed organs before the appearance of extra-ovarian eggs. It is doubtful whether a uterus with a definite wall ever exists—if so, it only persists through one or two segments. The ova seem from the first to be scattered at random in the parenchyme without a definite enclosing membrane. The onchospheres measure about 30 μ in diameter.

This seems to be only the second species of *Oochoristica* recorded from a snake. The other is *O. rostellata*, Zschokke, 1905*, from *Zamenis viridiflavus*. The present form appears to be more closely related to *O. rostellata* than to the various species from lizards, especially in the possession of a rudimentary rostellum, in the anterior position of the openings of the suckers, and in the excessively tortuous course of the lateral excretory vessels. It differs considerably from it, however, in dimensions and in the much smaller number of testes.

XXXV.—Note on Young Specimens of *Anthenea* sp.

By G. A. SMITH.

INCLUDED in a collection of echinoderms recently made by A. Loveridge, Esq., at Dar-es-Salaam, G.E.A., are two dry specimens which may be referred to the above genus.

Recent reports on collections from the above neighbourhood and from the Indian Ocean have contained descriptions of young specimens of *Pentaceros* and *Anthenea*, suggesting affinities with certain known species; but, on account of the lack of a large and varied series of specimens and the high

* Zeitschr. f. wiss. Zool. lxxxiii. p. 53.